

Amendments to the Claims

The following Listing of Claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Amended) An apparatus for detecting heat sealed places of plastic film means which is fed in a direction, said plastic film means including heat sealed portions formed at the heat sealed places, each of the heat sealed portions having a surface minutely rugged to constitute a pattern such as a mesh, said apparatus comprising:

light source means comprising a plurality of light sources opposed to said plastic film means, said light sources being spaced from each other in directions parallel and perpendicular to the direction in which said plastic film means is fed;

an optical sensor opposed to said plastic film means; and

a cover plate disposed between said optical sensor and said plastic film means, said cover plate including small hole or narrow slit means through which light passes, said light ~~source means~~ source emitting light ~~a plurality of lights~~ which ~~reflects from or permeates~~ reflect from or permeate through said plastic film means and then ~~passes~~ pass through said small hole or narrow slit means to be directed to said optical sensor, said optical sensor image recognizing the reflecting or permeating ~~light~~ lights and reading out the minutely rugged surface of heat sealed portion to detect the heat sealed place of plastic film means in accordance with a variation of image.

2. (Canceled)

3. (Canceled)

4. (Amended) The apparatus as set forth in ~~any one of claims 1 to 3~~ claim 1 wherein said small hole or narrow slit means comprises a plurality of small holes or narrow slits formed in said cover plate to be spaced from each other.

5. (Original) The apparatus as set forth in claim 4 wherein said small holes or narrow slits are spaced from each other in directions parallel and perpendicular to the direction in which said plastic film means is fed.

6. (Amended) The apparatus as set forth ~~any one of claims 1 to 5~~ claim 1 wherein said plastic film means is fed longitudinally thereof and intermittently, said plastic film means being heat sealed widthwise thereof whenever intermittently fed, said optical sensor then detecting the heat sealed place of plastic film means whenever said plastic film means is intermittently fed, a cutter being disposed at a position and moved by position adjustment means to adjust the position of edge of cutter in a direction parallel to the direction in which said plastic film means is fed, in response to a detecting signal transmitted from said optical sensor so that said plastic film means can be cut along a line predetermined at or near the heat sealed portion thereof by said cutter.

7. (Amended) The apparatus as set forth in ~~any one of claims 1 to 5~~ claim 1 wherein said plastic film means is fed longitudinally thereof and intermittently for a length, said plastic film means being heat sealed widthwise thereof by seal bar means disposed at a position whenever said plastic film means is intermittently fed, said optical sensor then detecting the heat sealed place of plastic film means whenever said plastic film means is intermittently fed, to adjust the feed length of plastic film means or the position of heat seal bar means in response to a detecting signal transmitted from said optical sensor so that said plastic film

means can be cut along a line predetermined at or near the heat sealed portion thereof by a cutter.

8. (Amended) The apparatus as set forth in ~~any one of claims 1 to 5~~ claim 1 wherein standing pouches are made from said plastic film means, each of the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges, a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of bottom and cross sealed portions to judge whether the relation in place between the bottom and cross sealed portions is good or no good, whenever said panel and bottom materials are fed widthwise of the standing pouches and intermittently after being bottom and cross sealed in a standing pouch making process.

9. (Original) The apparatus as set forth in claim 8 wherein each of said bottom sealed portions includes unsealed portions formed therein, each of said unsealed portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of unsealed portion.

10. (Original) The apparatus as set forth in claim 8 wherein each of said bottom sealed portions has a bowl-shaped upper edge, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of bowl-shaped upper edge.

11. (Original) The apparatus as set forth in any one of claims 8 to 10 wherein punch holes are formed in said bottom material at intersections between the bottom and cross sealed portions, said layers of panel material being partially sealed with each other at the places of punch holes, said punch holes protruding from the cross sealed portions to have protruding portions formed on the opposite sides of the cross sealed portions, each of the protruding portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the punch holes and the bottom and cross sealed portions is good or no good, in accordance with the place of protruding portion.

12. (Original) The apparatus as set forth in any one of claims 8 to 11 wherein said cross sealed portions have center lines along which notches are formed into the cross sealed portions from the bottom edges of panel material, said optical sensor judging whether the relation in place between the notches and the bottom and cross sealed portions is good or no good.

13. (Amended) The apparatus as set forth in ~~any one of claims 1 to 5~~ claim 1 wherein standing pouches are made from said plastic film means, each of the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges, a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to

include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of bottom and cross sealed portions to judge whether the relation in place between the bottom and cross sealed portions is good or no good, when said standing pouches are fed widthwise thereof after being made.

14. (Original) The apparatus as set forth in claim 13 wherein each of said bottom sealed portions includes an unsealed portion formed therein, said unsealed portion having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of unsealed portion.

15. (Original) The apparatus as set forth in claim 13 wherein each of said bottom sealed portions has a bowl-shaped upper edge, said optical sensor judging whether the relation in place between the bottom and cross sealed portions is good or no good, in accordance with the place of bowl-shaped upper edge.

16. (Original) The apparatus as set forth in any one of claims 13 to 15 wherein punch holes are formed in said bottom material at intersections between the bottom and cross sealed portions, said layers of panel material being partially sealed with each other at the places of punch holes, said punch holes protruding from the cross sealed portions to have protruding portions formed on the opposite sides of the cross sealed portions, each of the protruding

portions having a surface which is not or barely minutely rugged, said optical sensor judging whether the relation in place between the punch holes and the bottom and cross sealed portions is good or no good, in accordance with the place of protruding portion.

17. (Original) The apparatus as set forth in any one of claims 13 to 16 wherein each of said standing pouches are corner cut at corners between the bottom and opposite side edges thereof to give an appearance, said optical sensor judging whether the appearance of corner cutting is good or no good.

18. (Amended) The apparatus as set forth in ~~any one of claims 1 to 5~~ claim 1 wherein standing pouches are made from said plastic film means, each of the standing pouches comprising rectangular panel materials which are superposed into two layers to have bottom and opposite side edges, a bottom material being folded into halves, superposed into two layers and interposed between the layers of panel material at the bottom edges thereof, one of said layers of panel material being bottom sealed with one of said layers of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, the other layer of panel material being bottom sealed with the other layer of bottom material to include a bottom sealed portion formed along the bottom edge of panel material, said layers of panel material being cross sealed with each other to include cross sealed portions formed along the opposite side edges of panel material, each of the bottom and cross sealed portions having the minutely rugged surface, said optical sensor reading out the minutely rugged surfaces of cross sealed portions to judge whether the sealed width of cross sealed portion is good or no good, when said standing pouches are fed widthwise thereof after being made.

REMARKS

Claims 1-18 are pending in the present application. Claims 1-18 are rejected. Claims 2 and 3 are herein canceled. Claims 1, 4, 6-8, 13 and 18 are herein amended.

Specification

Applicant submits herewith an abstract of the invention.

Drawings

Eight formal drawings sheets for Figures 1-18 are included following the Remarks section of this paper.

Claim Objections

The Examiner asserts that there is a typographical error in claim 8. Applicant notes no such error, but note an artifact on the submitted specification that may appear to make the word “standing” to appear as “slanding”. Applicant herein amends claim 8, and confirms that there is no occurrence of the word “slanding”.

Claim Rejections

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,807,222 to Totani in view of U.S. Patent No. 3,947,117 to Basu et al.

Applicant herein amends claim 1, and subsequently disagrees with the rejection.

Applicant submits that, as defined in amended claim 1, the invention comprises an apparatus 2 that detects heat sealed places of plastic film means 4 which is fed in a direction X. The plastic film means 4 includes heat sealed portions 18 formed at the heat sealed places. Each of the heat sealed portions 18 has a surface minutely rugged to constitute a pattern such as a mesh. The apparatus 2 comprises light source means 23 and an optical sensor 24, which are opposed to the plastic film means 4. The light source means 23 comprises a plurality of light sources which are spaced from each other in directions parallel and perpendicular to the direction X in which the plastic film means 4 is fed. For example, four light sources 23 are spaced from each other in directions parallel and perpendicular to the direction X in which the plastic film means 4 is fed, as shown in Figs. 7 and 8.

The invention further comprises a cover plate 26 disposed between the optical sensor 24 and the plastic films means 4. The cover plate 26 includes small hole or narrow slit means 28 or 60 through which light passes. The light sources 23 emit a plurality of lights which reflect from or permeate through the plastic film means 4 and then pass through the small hole or narrow slit means 28 or 60 to be directed to the optical sensor 24. The optical sensor 24 image recognizes the reflecting or permeating lights and read out the minutely rugged surface or heat sealed portion 18 to detect the heat sealed place of plastic film means 4 in accordance with a variation of image.

As to the variation of image, Applicant notes that the light sources 23 emit the plurality of lights which reflect from or permeate through the plastic film means 4 at angles different from each other in directions parallel and perpendicular to the direction X in which the plastic film means 4 is fed, as shown in Fig. 3. The plurality of lights then passed through the small hole or narrow slit means 28 or 60 to be directed to the optical sensor 24 so that the optical sensor 24 can

clearly image recognize the reflecting or permeating lights. Applicant confirms a test in which when the plurality of light sources 23 are opposed to the plastic film means 4 and spaced from each other to emit the plurality of lights, as according to the invention, the optical sensor 24 can clearly image recognize the reflecting or permeating lights. Applicant also confirms by test that when only a single light source is opposed to the plastic film means 4 to emit a single light, the optical sensor 24 cannot always clearly image recognize the reflecting or permeating light.

In addition, Applicant emphasizes that the reflecting or permeating lights are deflected by the minutely rugged surface of heat sealed portion 18 when the plastic film means 4 is fed in the direction X and the heat sealed portion 18 reaches the position at which the apparatus 2 is disposed. The reflecting or permeating lights then pass through the small hole or narrow slit means 28 or 60 to be directed to the optical sensor 24 so that the images of reflecting or permeating lights should be remarkably disturbed and changed.

The detector 24 can therefore read out the minutely rugged surface of heat sealed portion 18 by any of the reflecting or permeating lights remarkably disturbed and changed. As a result, the apparatus can reliably detect the heat sealed places of plastic film means 4 without difficulty.

In contrast, none of the cited references disclose the plurality of light sources spaced from each other in directions parallel and perpendicular to the direction in which the plastic film means is fed, according to the invention. Applicant notes that Totani and Basu et al. merely disclose a single light source (7 or 9, respectively). Therefore, Applicant submits that Totani and Basu et al. could not obtain the above effect and advantage of the invention that the apparatus can reliably detect the heat sealed places of plastic film means without difficulty.

Furthermore, Applicant notes that Totani relates to an apparatus including a detector 8 for recognizing the contour of a notch hole 4 as image data. The notch hole 4 is formed in plastic

film means 1. It should be noted that the light source 7 emits light which passes through the notch hole 4 to be directed to the detector 8. Unlike the apparatus of the invention, the light does not reflect from or permeate through the plastic film means 1 to be directed to the detector 8. Accordingly, the detector 8 cannot read out the minutely rugged surface of the heat sealed portion to detect the heat sealed place of plastic film means. Therefore, Applicant submits that Totani does not teach or suggest the present invention.

Applicant notes that Basu et al. relates to an apparatus including a photoreceptor 18 by which a document 11 is scanned. Applicant notes that the light source 15 emits light which reflected by mirrors 12, 13, 16 and 17. The light then merely passes through a slit 19 formed in a plate 20 to be directed to the photoreceptor 18. It has no relation with the heat sealed portion of plastic film means. Therefore, Applicant submits that Basu et al. does not teach or suggest the present invention.

For at least the foregoing reasons, Applicant submits that the claimed invention as herein amended distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

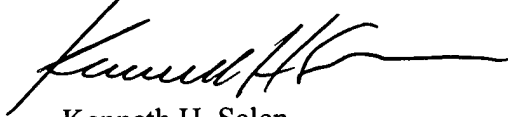
Should the Examiner deem that any further action by Applicant would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone Applicant's undersigned attorney.

Response under 37 C.F.R. §1.111
Serial No. 09/857,207

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully Submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read 'Kenneth H. Salen', written in a cursive style.

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Response under 37 C.F.R. §1.111
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Eight Formal Drawing Sheets for Figures 1-18